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UNIVERSITY
OF
TORONTO

Faculty of Dentistry

Examinations
1953

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UNIVERSITY OF TORONTO
Faculty of Arts

Annual Examinations, 1953

First Year - General

ART & ARCHAEOLOGY 1a

The Art of Classical Antiquity & the Byzantine Empire

Students must answer Questions 1, 7, and any three others

1. Identify, date approximately and give a brief outline of the historical significance of the monuments on the slides shown on the screen.

2. Discuss the similarities and differences between Bronze Age palaces in Crete and on the mainland.

3. Describe in detail the sculpture of the Parthenon in Athens.

4. Discuss the developments in Doric architecture of the fifth century B. C. which distinguish it from Doric buildings of the Archaic period. Illustrate your remarks by reference to specific examples.

5. Discuss the essential differences between Greek and Roman architecture, with special reference to the character and functions of the buildings themselves, and to the building materials and methods employed by the respective cultures.

6. Describe in detail the plan and construction of the Colosseum in Rome.

7. Compare and contrast the houses at Olynthos with those at Delos.

or

Describe in detail the plan and construction of either the Council House at Miletos or the Assembly Hall at Priene.

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Chemistry 108

UNIVERSITY OF TORONTO
FACULTY OF DENTISTRY

ANNUAL EXAMINATIONS—JANUARY, 1953

CHEMISTRY 108
PREDENTAL YEAR

Examiner: J. J. Rae

Logarithm cards and slide rules may be used.

Marks

11 1. (*a*) Define the terms solubility and rate of solution.

(*b*) The Ksp. for calcium carbonate is 1×10^{-8} at 15°. Calculate the number of milligrams of $CaCO_3$ dissolved in 200 ml. of a saturated solution of $CaCO_3$ at 15° which is 0.0001 M with respect to sodium carbonate.

10 2. (*a*) State Graham's Law of Gaseous Diffusion and explain it by means of the kinetic-molecular theory. How may this law be used to calculate molecular weights?

(*b*) Calculate the weight of water vapour in a room $5 \times 5 \times 6$ m. if the relative humidity is 60%, the temperature 22° and the pressure 780 mm. The vapour pressure of water at 22° is 20 mm.

15 3. Explain what is meant by the following:

(*a*) colligative properties of solutions,
(*b*) heat of formation,
(*c*) mechanical mixture,
(*d*) fractional distillation,
(*e*) Avogadro's hypothesis.

14 4. (*a*) List the data needed to calculate the accurate atomic weight of a newly discovered element and show how the data are used in the calculation.

(*b*) Calculate the empirical formula for copper tellurite from the fact that this compound on analysis was found to contain 26.6% copper; 20.2% oxygen and 53.2% tellurium.

(*c*) Explain why $0 = 16$ was chosen as the standard for atomic weights.

16 5. (*a*) Define and give examples of the following:

(i) ionic valence,
(ii) covalence,
(iii) oxidation number,
(iv) coördination number.

(*b*) Explain (i) why certain substances such as copper (II) chloride do not obey Raoult's law.

(ii) Why a ten-fold dilution of an acetic acid solution raises the pH even though the % ionization is increased.

(iii) Why solutions of weak acids and their salts act as buffers.

(iv) Why strong acids displace weak acids from their salts.

12 6. Write essays of not more than one page each on *any two* of the following topics:

(i) The Preparation and uses of industrial gases,
(ii) Important uses of inorganic salts,
(iii) The silicate industries,
(iv) Non-ferrous metallurgy and alloys.

10 7. (*a*) State two uses for the periodic table.

(*b*) Define the term colloid. Give examples, one for each of a material which is (i) an emulsion, (ii) a lyophobic colloid, (iii) a reversible gel, (iv) a peptizing agent.

(*c*) What is the electrochemical series?

12 8. (*a*) Molar hydrocyanic acid (HCN) ionizes 0.01%. Calculate the ionization constant for this acid and the pH of an 0.02 M solution.

(*b*) Give a name and a formula for a substance that belongs to each of the following classes:

(i) a ternary acid,
(ii) a diacid base,
(iii) an acid salt,
(iv) a complex salt,
(v) a reducing agent.

UNIVERSITY OF TORONTO
FACULTY OF DENTISTRY
FACULTY OF FORESTRY
ONTARIO COLLEGE OF PHARMACY

ANNUAL EXAMINATIONS, 1953

FIRST AND SECOND YEAR

ENGLISH COMPOSITION

Examiners: The Staff in English

Candidates will write an essay of approximately 1,000 words on ONE *of the following topics:*

1. The novelist's most pressing problem.
2. A play should be read as well as seen.
3. The relation between pure and applied science in my profession.
4. The $46.00 office boy.

Candidates are reminded that their essays will be marked on the basis of thought content, organization, grammar, diction, spelling, and punctuation.

English Literature.

UNIVERSITY OF TORONTO

FACULTY OF DENTISTRY
FACULTY OF FORESTRY
ONTARIO COLLEGE OF PHARMACY

ANNUAL EXAMINATIONS, 1953

FIRST YEAR—SECOND YEAR

ENGLISH LITERATURE

Examiners—THE STAFF IN ENGLISH

Candidates will answer ALL *questions in* PART I (*value: 40%*) *and any* THREE *questions from* PART II (*value: 60%*).

PART I

1. Indicate the significance of the roles assigned to *three* of the following: (*a*) Trulliber, (*b*) Dunois, (*c*) Izz Huett, (*d*) Hastings, (*e*) Turton.

2. Place each of *three* of the following in its context, and comment on its particular significance in the work in which it appears:

(*a*) "How can you tell, you strange fellow?"
"Not difficult, the one thing I always know."
"Can you always tell whether a stranger is your friend?"
"Yes."
"Then you are an Oriental."

(*b*) "In the room the women come and go
Talking of Michelangelo."

(*c*) "My wits begin to turn.
Come on, my boy: how dost, my boy? art cold?
I am cold myself. Where is this straw, my fellow?
The art of our necessities is strange
That can make vile things precious. Come, your hovel."

(*d*) "A comic romance is a comic epic poem in prose; different from comedy, as the serious epic from tragedy: its action being more extended and comprehensive; containing a much larger circle of incidents, and introducing a greater variety of characters."

(*e*) "For, don't you mark? we're made so that we love
First when we see them painted, things we have passed
Perhaps a hundred times nor cared to see;
And so they are better, painted—better to us,
Which is the same thing. Art was given for that;
God uses us to help each other so,
Lending our minds out."

3. Answer briefly any *two* of the following:

(*a*) Why does Mill refer to Socrates in *On Liberty*?

(*b*) Why does Arnold refer to T. H. Huxley in "Literature and Science"?

(*c*) Why, in the "Immortality Ode", does Wordsworth refer to the child as "Mighty prophet, seer blest"?

(*d*) What do you learn from *Erewhon* about Butler's views on the treatment of criminals in Victorian England?

PART II

4. "Since internal conflict rather than external conflict is the key to great tragedy, a tragic play or novel requires no villain." Referring to at least three of the works you have studied this year, support *OR* refute this opinion.

5. Indicate which of the four books of *Gulliver's Travels* you found the most satisfactory and which the most unsatisfactory. Give reasons for your choices.

6. "In 'The Wasteland' Eliot has described a Hell every bit as real as the Hell depicted by Milton in *Paradise Lost*." Comment on this judgment.

7. How do Manoa and Dalilah unconsciously contribute to the regeneration of Samson?

8. To what extent does Forster's account of the relations between Aziz and Fielding contribute to the central theme of *A Passage to India*?

9. Wordsworth, Fielding, and Shaw have each provided a preface to their poems, novel, or play. For any *one* of these writers, establish the extent to which the preface is a useful introduction to the work in question.

10. "To be successful, comedy must be critical; mere amusement is not sufficient to produce a work of final importance." To what extent does *She Stoops to Conquer* support *OR* contradict this statement?

11. Assess the parts played (*a*) by society, (*b*) by chance, in accomplishing the downfall of Tess.

12. In what circumstances, according to Mill, should a government interfere with the activities of the individual?

French 1a

UNIVERSITY OF TORONTO
FACULTY OF ARTS

ANNUAL EXAMINATIONS, 1953

FIRST YEAR—GENERAL

FRENCH 1a

(*Write* PARTS A *and* B *in separate books.*)

PART A

1. Translate into English:

Montons sur un de ces sommets qui avancent dans la plaine comme la proue d'un navire. De là nous verrons à nos pieds le pays presque en entier, nous lirons une carte vivante et mouvante, d'une richesse de coloris sans pareille. Nous dominerons la plaine, prodigieusement fertile, où les blés dorés, les champs rouges ou verts alternent avec les prés et les grandes masses bleues des forêts. Les routes serpentent, entre deux rangées d'arbres fruitiers qui, de là-haut, ressemblent à de petits colliers verts égrenés sur la plaine; elles relient d'innombrables villages, aux maisons groupées au pied d'une tour massive ou d'un fin clocher. Tout au loin un mince fil d'argent qui parfois scintille au soleil: c'est le Rhin. Plus loin encore, dans la brume, la ligne bleue estompée de la Forêt Noire.

2. Translate into French:

This evening I am almost too tired to write you a letter but, although it is late, I must not postpone it any longer. I ought to have written you two days ago. Our trip across the ocean was very pleasant. We had only one bad day—Wednesday—when it rained very hard. We met several nice people on the boat, including an absent-minded professor who learned, to his great surprise, after we had left the St. Lawrence, that we were *not* going to South America. Most of the travellers said that they wanted to see as much as possible in two months.

When we landed at Le Havre we saw hundreds of boats. It is a wonderful port. The French trains amused us; their engines and coaches were so different. They go fast, however. In a few hours we were in one of the largest cities in the world. The streets seemed too narrow for the swarms of people and automobiles that passed incessantly. We have now been in Paris a week and are beginning to love this beautiful city. There are so many things to see, but I fear we shall see very few before leaving for London. When you make your trip in nineteen fifty-three, I advise you to spend all your time in Paris.

PART B

1. Translate into idiomatic English, and answer *briefly* the questions that follow:

Ce jeune homme n'avait pour prendre ce nom aucun motif raisonnable; si ce n'est qu'il était parent éloigné du Titien, et qu'il s'appelait, de son nom de baptême, Tito, dont il avait fait Titien, et de Titien Tizianello, moyennant quoi les badauds de Venise le croyaient héritier du génie du grand peintre, et s'extasiaient devant ses fresques. Pippo ne s'était jamais guère inquiété de cette supercherie ridicule; mais en ce moment, soit qu'il lui fût désagréable de se trouver vis-à-vis de ce personnage, soit qu'il pensât à sa propre valeur plus sérieusement que d'ordinaire, il s'approcha de l'échafaud qui était soutenu par de petites poutres mal étayées; il donna un coup de pied sur l'une de ces poutres, et la fit tomber; fort heureusement l'échafaud ne tomba pas en même temps, mais il vacilla de telle sorte, que le soi-disant Tizianello chancela d'abord comme s'il eût été ivre, puis acheva de perdre l'équilibre au milieu de ses couleurs dont il fut bariolé de la plus étrange façon.

(*a*) Locate the passage. Name the author.

(*b*) What is the immediate outcome of the episode mentioned here?

(*c*) What connection does this episode have with the plot of the story?

2. Show, with examples, what is typically romantic in the following short stories: *Le dernier Abencérage, La Combe de l'homme mort*, and *Le Fils du Titien.*

3. Choice of (*a*) or (*b*).

(*a*) Vigny said of his play *Chatterton:*

"C'est l'histoire d'un homme qui a écrit une lettre le matin et qui attend la réponse jusqu'au soir; elle arrive, et le tue."

Does this summing-up of the plot give an adequate idea of the play? Discuss.

OR

(*b*) Show how Vigny, in his introduction to *Chatterton* (*Dernière nuit de travail*) poses and resolves the problem of the place of the poet or man of genius in modern society.

4. Locate (author and poem) and explain briefly the significance of each of these lines, within the poem from which it is taken:

(*a*) "Un seul être vous manque et tout est dépeuplé."

(*b*) "Que peu de temps suffit pour changer toutes choses!
Nature au front serein, comme vous oubliez!"

(*c*) "A voir ce que l'on fut sur terre et ce qu'on laisse
Seul le silence est grand; tout le reste est faiblesse."

(*d*) "Un souvenir heureux est peut-être sur terre
Plus vrai que le bonheur."

UNIVERSITY OF TORONTO
FACULTY OF DENTISTRY

ANNUAL EXAMINATIONS, APRIL, 1953

PRE-DENTAL YEAR

MATHEMATICS

Examiner—D. A. Sprott

A few questions well answered will be worth more than a large number partially answered.

1. A particle moves with constant angular velocity $\frac{d\theta}{dt} = \omega$ around a circle of radius $a (x = a \cos \theta, y = a \sin \theta)$. Find its velocity and acceleration in magnitude and direction.

2. The sides of an equilateral triangle are increasing at the rate of 10 feet per minute, and its area is increasing at the rate of 100 sq. ft. per minute. Obtain in simplest form (it is not necessary to work out numerically) an expression for the length of the side of the triangle. $\left(\frac{1}{2} bc \sin A = \text{area}\right)$.

3. Show that for all values of the constants a and b the curves

$$x^2 - y^2 = a^2,$$
$$xy = b^2$$

intersect at right angles.

4. When a wheel rolls along a straight line, a point P on its perimeter describes the cycloid with parametric equations

$$x = a(\theta - \sin \theta),$$
$$y = a(1 - \cos \theta)$$

where a is the radius of the wheel, and θ is the angle through which it has turned. If the wheel rotates with constant angular velocity $\frac{d\theta}{dt} = \omega$, find the velocity and the acceleration in magnitude and direction of the point P at the instant when it passes through its lowest position (i.e. when $y = 0$).

5. A window has the form of a rectangle surmounted by a semicircle. If the perimeter is 40 feet, prove that in order to admit the maximum amount of light, the height of the rectangle should equal the radius of the semicircle.

6. (*a*) A sphere is to be constructed to have a volume of 36π cu. ft. If the volume must be correct to within $\frac{1}{16}\pi$ cu. ft., what is the maximum allowable error (to the nearest .0001 ft.) in the radius?

(*b*) The period of a pendulum is given by $P = 2\pi\sqrt{\frac{l}{g}}$. How accurately must the length l be measured in order to ensure that the error in the value of P shall not exceed 1%.

7. (*a*) When bacteria grow in the presence of unlimited food, they increase at a rate proportional to the number present. Express that number as a function of the time.

(*b*) On a certain curve, $\frac{d^2y}{dx^2} = x - 1$. If the curve passes through $(-1, 1)$ and has at that point the slope 2, find its equation.

8. (*a*) Differentiate with respect to x the following functions:

$$y = \frac{1}{3}(x^3 + 3x^2 - 5)\,, \qquad y = \tan^{-1}\frac{4 \sin x}{3 + 5 \cos x}\,,$$

$$y = \sqrt{\frac{x^2 - 1}{x^2 + 1}}\,, \qquad y = \log(\log ax)\,,$$

$$y = \frac{\sqrt{1 - \cos^2 x}}{\sin x}\,.$$

(*b*) Evaluate:

$$\lim_{x \to \pi} \frac{1 + \cos x}{x - \pi}\,.$$

9. (*a*) What is the probability of throwing 9 heads exactly twice in 5 throws of 10 coins?

(*b*) M throws 3 coins and N rolls 2 dice. If this experiment is repeated 10 times, what is the probability that 3 heads and a pair of sixes occur simultaneously at least once?

10. (*a*) Find the area of the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$.

(*b*) Find the volume generated when the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ is rotated about the major axis.

11. (*a*) Prove that the moment of inertia of a sphere about any diameter is $\frac{2}{5} M r^2$ where M = mass of sphere.

(*b*) A particle P is attracted toward a fixed point O with a force equal to Kr where K = constant and r = distance from O to P. Find the work done by this force when the particle moves from a position where $r = a$ to a position where $r = b$.

12. An insurance company finds that .005% of the population dies from a certain kind of accident each year. What is the probability that the Company must pay off on more than 3 of 10,000 insured risks against such accidents in a given year?

$$(e^{-\frac{1}{2}} = .6065)\,.$$

13. A batch of small calibre ammunition is accepted as satisfactory if none of a sample of 5 shots falls more than 2 feet from the centre of a target at a given range. If r, the distance from the target centre to a given impact point, actually has the density

$$f(r) = \frac{2re^{-r^2}}{1 - e^{-9}} \, (0 < r < 3)$$

for a given batch prove that the probability the batch will be accepted is

$$\left(\frac{1 - e^{-4}}{1 - e^{-9}}\right)^5 .$$

Organic Chemistry 216

UNIVERSITY OF TORONTO
FACULTY OF DENTISTRY

ANNUAL EXAMINATIONS, APRIL, 1953

PREDENTAL YEAR

CHEMISTRY 216
ORGANIC CHEMISTRY

Examiner—J. J. Rae

1. Outline a classification for the four main groupings of organic compounds. State the basis for the classification used and give the name and structural formula for a representative of each group.

2. Show by a series of reactions how a member of the first named group may be converted into a member of the second named group.
   (i) an aliphatic compound into an aromatic compound,
   (ii) an acid into an aldehyde,
   (iii) an aromatic hydrocarbon into an acyl halide.

3. (*a*) Write a descriptive note on optical isomerism.

   (*b*) Write formulas for *six* different compounds with the molecular formula, $C_4H_8O_2$. State the kinds of isomerism exhibited among these compounds.

4. Write an essay, not more than two pages long, on *any one* of:
   (i) Organic Chemistry and food,
   (ii) Organic Chemistry and drugs,
   (iii) Plastics and Synthetic Rubber.

5. Write a structural formula, give an alternative name and state a specific use for *each* of the following:

   (i) lactic acid,
   (ii) urotropine,
   (iii) fuchsine,
   (iv) novocaine,
   (v) isoprene,
   (vi) saccharin,
   (vii) ephedrine,
   (viii) tyrosine.

6. (*a*) Discuss *EITHER* the reactions of:
   (i) diazo compounds *OR* (ii) acids.

   (*b*) Write an equation to illustrate *each* of the following:
   (i) condensation reaction,
   (ii) acylation,
   (iii) saponification,
   (iv) ammonolysis.

7. (*a*) Distinguish among the following radicals:

(i) benzyl, (ii) toluyl, (iii) xylyl.

(*b*) Define the following terms and illustrate your answer by means of examples:

(i) antipyretic,
(ii) cöpolymer,
(iii) chromophore group,
(iv) meta compound,
(v) protein.

UNIVERSITY OF TORONTO
FACULTY OF FORESTRY
FACULTY OF DENTISTRY
ONTARIO COLLEGE OF PHARMACY

CHRISTMAS EXAMINATION, DECEMBER 3, 1952—2.00 P.M.

PHYSICS

MECHANICS, PROPERTIES OF MATTER, HEAT

Examiner—A. C. H. Hallett

Any SEVEN *questions constitute a full paper. Candidates are permitted the use of Slide-rules and Mathematical Tables.*

1. (*a*) Define a vector and give two examples.

(*b*) An aeroplane flying 500 ft. above the ground with a velocity of 200 miles/hr. is required to drop a bomb on a certain ground target. Calculate (i) how far in advance of the target the bomb must be dropped, and (ii) the magnitude and direction of the velocity with which the bomb hits the target.

2. (*a*) State Newton's first two laws of motion.

(*b*) A frictionless trolley of mass 1000 gms. rests upon a plane inclined at an angle of 15° to the horizontal. A weightless cord passes over a frictionless pulley at the upper end of the plane, and connects the trolley with a mass of 200 gms. which hangs freely. Calculate the acceleration of the system.

3. (*a*) If the mass of the sun is 2×10^{33} gms., calculate the distance between the earth and the sun assuming that the earth's orbit is a circle with the sun as centre, and that the earth completes one revolution in 365 days.

(*b*) A torque of 10 ft.-poundals is applied to a flywheel in the form of a solid disk of mass 30 lbs. and of diameter 1 ft. If the flywheel is initially at rest, calculate the time required for it to acquire a speed of 1800 revolutions per minute.

4. (*a*) State the Law of Conservation of Energy.

(*b*) A hollow sphere of mass 500 gms. rolls 200 cm. down a plane inclined at an angle of 30° to the horizontal. Calculate (i) the velocity with which the ball leaves the plane, and (ii) the rotational kinetic energy of the hollow sphere 100 cm from its starting point.

5. (*a*) Define the coefficient of friction.

(*b*) A uniform ladder 16 ft. long has a mass of 50 lbs. and makes an angle of 60° with the rough floor upon which it stands. The upper end of the ladder rests against a smooth wall. If the coefficient of friction between the ladder and the floor is 0.5, calculate how far up the ladder a man of mass 150 lbs. can climb before the ladder slips.

6. (*a*) Define the coefficient of restitution and describe briefly an experiment designed to determine it.

(*b*) A bag of sand of mass 50 lbs. is suspended from a ceiling by a rope 10 ft. long. A bullet of mass 1 oz. travels horizontally with a velocity of 1500 ft./sec. and embeds itself in the sand. Calculate the maximum angle that the sandbag makes with the vertical.

7. (*a*) Define the modulus of rigidity of a metal.

(*b*) A steel wire of length 75 cm. has a diameter of 0.5 mm. and supports a mass of 500 gms. When the mass is pulled down slightly and released, it vibrates up and down, 50 times a second, like a spiral spring. Calculate Young's modulus for the wire.

8. (*a*) A uniform wooden rod 20 cm. long is weighted at one end so that it floats upright in water with 5 cm. of the rod above the surface. If the rod is placed in alcohol of specific gravity 0.79, calculate the length of the rod above the surface.

(*b*) Calculate the height to which liquid helium will rise in a capillary of 0.4 mm. bore.

9. (*a*) A platinum wire of diameter 0.25 mm. is sealed into a pyrex glass capillary so that at 20°C. there is no space between the wire and the glass. The tube and wire are then immersed in liquid helium. Calculate the width of the uniform gap between the wire and the tube at 2°K.

(*b*) Calculate the amount of heat conducted per second along a platinum wire of length 50 cm. and diameter 0.5 mm. if one end is maintained at 20°C. while the other is immersed in liquid helium at 2°K.

10. (*a*) Describe briefly one method of liquefying helium.

(*b*) One litre of liquid helium at 4.2°K. is poured into a pyrex glass Dewar flask initially at 90°K. If 200 gms. of glass come into contact with the liquid, and if the specific heat of glass at these temperatures is 0.02 calories per gm. per °C., calculate the volume of liquid which remains in the flask.

11. (*a*) State Boyle's Law for a perfect gas.

(*b*) A vessel of volume 5.0 litres contains helium gas at 20°C. and 1.0 atmosphere pressure. A second vessel of volume 1.0 litre is immersed in liquid air at 83°K. and is completely evacuated. If connection is made between the two vessels by a tube of negligible volume, calculate the pressure in the system.

DATA

Moments of Inertia:

Circular Disk of mass M and radius r about an axis through centre perpendicular to face $I = \frac{1}{2}Mr^2$

Sphere of mass M and radius r about any diameter $I = \frac{2}{5}Mr^2$

Hollow sphere of mass M and radius r about any diameter $I = \frac{2}{3}Mr^2$

Universal constant of gravitation $G = 6.67 \times 10^{-8}$ cm^{3}gm^{-1}sec^{-2}

Pyrex Glass:

Coefficient of linear expansion $= 3.0 \times 10^{-6}$/°C.
Specific gravity $= 2.6$

Platinum:

Coefficient of linear expansion $= 9.0 \times 10^{-6}$/°C.
Specific gravity $= 21.4$
Thermal conductivity = 0.08 cal/cm/sec/°C.
Specific heat = 0.032 cal/gm/°C.

Liquid helium:

Surface tension = 0.10 dynes/cm.
Density = 0.125 gms/cm.^{3}
Specific heat = 0.98 cal/gm/°C.
Latent heat of vaporisation = 4.9 cal/gm.

Physics

UNIVERSITY OF TORONTO

FACULTY OF DENTISTRY—PREDENTAL YEAR
FACULTY OF FORESTRY—FIRST YEAR
ONTARIO COLLEGE OF PHARMACY—SECOND YEAR B.Sc.Phm.

ANNUAL EXAMINATIONS, APRIL 17, 1953

PHYSICS

SOUND, ELECTRICITY AND MAGNETISM, LIGHT, ATOMIC PHYSICS

Examiner—A. C. H. Hallett

Any SIX *questions constitute a full paper. Candidates are permitted the use of Slide-rules and Clark's Tables.*

1. (*a*) An oil drop has a mass of 2.5×10^{-11} gm. and carries two electronic charges. If it is situated between two horizontal plates 2.0 cm. apart, calculate the potential difference which must be applied to the plates to support it.

(*b*) Explain how a paramagnetic salt may be used to obtain temperatures below 1°K.

2. (*a*) The e.m.f. of a certain cell was measured by a potentiometer and found to be 1.087 volts. A voltmeter of resistance 150 ohms was connected across the cell and the reading was 0.95 volt. Calculate the internal resistance of the cell.

(*b*) Describe and explain the action of a simple A.C. generator.

3. Explain:
   (i) the purpose and action of a resonant circuit in a radio;
   (ii) the action of a detector in a radio;
   (iii) how a triode may be used to amplify small alternating voltages.

4. (*a*) Explain what is meant by the "depth of field" of a camera lens, and indicate how it might be calculated.

(*b*) A converging lens of power 1 dioptre is placed in contact with a camera lens of focal length 50 mm. What should be the focus setting of the camera to photograph an object 20 inches from the lens combination?

5. (*a*) Describe the "Kodachrome" process of colour photography and explain how yellow light would be recorded.

(*b*) If the polarising angle for a piece of glass is 60°, what is the critical angle for a ray of light passing from this glass into ethyl alcohol of index of refraction 1.362?

6. (*a*) Explain the physical difference between the formation of a spectrum by a diffraction grating and the formation of the spectrum from the same light source by a glass prism.

(*b*) Explain how the Fraunhofer lines in the Sun's spectrum are produced.

(*c*) In the spectrum of the star Procyon, an iron line of wavelength 4045 Angstrom units is found to be shifted 0.40 Angstrom units towards the violet. Calculate the magnitude and direction of the velocity of the star relative to the earth.

7. (*a*) Show by means of diagrams how the K and L lines of the X-ray spectrum of a metal are produced. Which has the smaller wavelength and why?

(*b*) A beam of X-rays are reflected in a Bragg crystal spectrometer at an angle of 15° (measured between plane of the rock salt crystal and the direction of the incident beam). Calculate the wavelength of the X-rays and explain the effect observed.

8. (*a*) Explain what is meant by the half-life of a radioactive material.

(*b*) Describe briefly the Davisson-Germer experiment and explain what it proved.

(*c*) At what velocity is the effective mass of an electron equal to twice its rest mass?

9. (*a*) List the fundamental particles which form a neutral ${}_9F^{19}$ atom and indicate the number of each particle present.

(*b*) Calculate the minimum energy of neutrons required to disintegrate ${}_6C^{12}$ according to the reaction

$$ {}_0n^1 + {}_6C^{12} = {}_4Be^9 + {}_2He^4. $$

(*c*) Explain what is meant by a "chain reaction".

DATA

Electron charge	4.80×10^{-10} e.s.u.
or	1.60×10^{-19} coulombs.
Electron Mass	9.11×10^{-28} gms.
or	0.00055 a.m.u.
Planck's Constant	6.62×10^{-27} erg.-sec.
Separation of planes in a rock salt crystal	2.81 Angstrom units.
Velocity of light	3×10^{10} cm./sec.
${}_0n^1$ mass	1.00893 a.m.u.
${}_6C^{12}$ mass	12.00398 a.m.u.
${}_4Be^9$ mass	9.01504 a.m.u.
${}_2He^4$ mass	4.00389 a.m.u.
Annihilation energy of 1 a.m.u.	931 Mev.
Avogadro's Number	6.02×10^{23} atoms/gm.-atom.

UNIVERSITY OF TORONTO
FACULTY OF DENTISTRY

ANNUAL EXAMINATIONS, MAY, 1953

PREDENTAL YEAR

ZOOLOGY

1. *List* the characteristics of the flatworms which show an advance in organization over the lower invertebrates.

Describe the advance made in this group with respect to three of these characteristics.

2. With the aid of diagrams describe the structure and physiological action of the metanephric kidney.

Tabulate the differences between this type of kidney and the earlier kidneys of vertebrates.

3. By means of a diagram trace the path of a red corpuscle from the hind limb to the lung of a frog. Name all blood vessels and heart chambers passed through.

Note the differences in the path taken by a red corpuscle in passing from the hind limb to the lung of a mammal.

4. Give an outline classification of connective tissues. Describe with diagrams two such tissues. From what embryonic germ layers do connective tissues develop?

5. *In tabular form* give the embryonic origin of the following adult mammalian structures: malleus; male pelvic urethra; arch of aorta; Gartner's canal; pituitary gland; supraoccipital bone; urinary bladder; lumbar vertebra; corial layer of integument; lung; mesogastrium; vestibule of female rabbit; brachial plexus; appendix testis; external oblique muscle.

UNIVERSITY OF TORONTO
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ANNUAL EXAMINATIONS, MAY, 1953

FIRST DENTAL YEAR

ANATOMY

Be relevant. Write legibly.

1. Describe the origin, relationships and distribution of the inferior dental nerve.

2. Describe the origin, course and relationships of the right common carotid artery.

3. Write short notes on:
   (*a*) The thyroid cartilage
   (*b*) The tonsil
   (*c*) The pharyngo-tympanic tube
   (*d*) The cerebellum.

4. Give a full account of the buccinator muscle, including its function.

5. (*a*) Name the structures in the root of the lung, and note the function of each.

   (*b*) Draw a large diagram of the stomach, and name its parts fully.

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FIRST DENTAL YEAR

ANATOMY
ORAL

Part A—DENTAL ANATOMY

Fill in the blank spaces in the following sentences with the appropriate word or words.

1. When the teeth are arranged in what might be considered to be a normal centric occlusal relation the mesio-lingual cusp of the upper first molar fits into the .... of the lower first molar. The oblique ridge of the upper first molar fits into the .... of the lower first molar. At the same time the .... cutting arm of the lower cuspid occludes with the .... cutting arm of the upper cuspid. The distance that the incisal edges of the upper anteriors extend below the incisal edges of the lower anteriors is termed ....

2. The condyle of the mandible fits into the .... in the temporal bone. The articulating surfaces are covered with .... and are separated from one another by the .... which is composed of .... The whole temporomandibular joint is bound by the capsule which is thickened on its outer surface to form the .... ligament. Two other ligaments which serve to prevent displacement of the joint are the .... and ....

3. Of the four main masticatory muscles only two have fibres so arranged that they can retract the mandible. These are the .... and the .... Only one of this group of four muscles acts to open the jaw. It is the .... It is aided in this action by the ...., ... and .... muscles when the hyoid bone is fixed by the infrahyoid muscles.

4. The mesial contact area of the upper first molar tooth is located slightly .... to the centre of the crown bucco-lingually, and is .... to the occlusal surface than it is to the cervical line. When the first molar and second bicuspid are in contact, the space from the contact area occlusally is termed the .... The area below the contact is called the .... It is normally filled with the ....

5. During the period of a child's life between the ages of... the deciduous molar teeth are lost and are replaced by the permanent .... Since these teeth are .... than the deciduous teeth they replace, the first molars must drift .... Since the lower deciduous molars are .... mesio-distally than are the upper molars, the lower first permanent molar must migrate .... than the upper. This ensures that the correct relation of the two permanent molars is established, namely that the tip of the mesio-buccal cusp of the upper molar fits into the .... of the lower.

PART B—DENTAL ANATOMY

Answer true (T) or false (F) to *each* of the following questions in the space provided.

.... 1. The roots of all of the teeth are fully developed before the teeth erupt.

.... 2. The mesial surface of the canine teeth is more convex cervico-incisally than is the distal surface.

.... 3. The root canal of the cuspid teeth is wider labio-lingually than it is mesio-distally.

.... 4. The cervical ridge serves the very important function of protecting the periodontal tissues from food impaction.

.... 5. The stimulus of wear is one of the important factors in causing the reduction in size of pulp chambers of the permanent teeth.

.... 6. The incisal edge of |2 is at a right angle to the line bisecting the tooth labio-lingually.

.... 7. The lingual cusp of the upper bicuspid teeth is narrower mesio-distally than is the buccal cusp.

.... 8. The upper second premolar is somewhat smaller in all dimensions than is the first premolar.

.... 9. If the buccal and lingual roots of the upper first premolar are fused into one, we should expect to find only one root canal as well.

.... 10. $\overline{5/5}$ invariably have three cusps.

.... 11. The tip of the buccal cusp of the lower bicuspid teeth is located very slightly buccal to the line through the long axis of the teeth.

.... 12. The buccal cusps of the lower molar teeth are longer and more pointed than are the lingual cusps.

.... 13. When the teeth are closed in centric relation the buccal cusp of the upper second premolar fits into the buccal embrasure between the lower second premolar and the lower first molar.

.... 14. One should expect to find all of the deciduous teeth present in the mouth of a child three years old.

.... 15. The second permanent molar teeth erupt at age fifteen.

.... 16. When a tooth erupts the apical foramen is closed.

.... 17. Three anomalies of the permanent teeth which represent an interference with the developing tooth germ are:

    1.
    2.
    3.

.... 18. If the motor nerve to the masseter muscle were cut at its point of entry into the muscle, one would be unable to close one's jaws.

.... 19. The mesial and distal pits on the occlusal surface of the upper second premolar are closer together than are the same pits on the upper first premolar.

.... 20. Overjet refers to the distance that the upper teeth extend labially and buccally beyond the labial and buccal surfaces o fthe lower teeth.

Part C—SPECIAL ORAL ANATOMY

To be answered in a separate book.

Discuss *very briefly* three of the five following subjects. Do not answer more than three. These will be graded for clarity, content and brevity.

(*a*) Racial differences in facial growth.

(*b*) Naso-respiratory disease and the development of the dentition.

(*c*) The embryology of the human palate.

(*d*) Genetic influence on the development of the dentition.

(*e*) Birth injuries and facial growth.

UNIVERSITY OF TORONTO
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ANNUAL EXAMINATION

FIRST DENTAL YEAR

COMPARATIVE DENTAL ANATOMY

1. List the organs of food prehension which have appeared in Invertebrate animals. Describe the action of food prehension in Protozoa.

2. Describe the structure and action of Selachian organs of food prehension.

3. Why was the Orthocone alignment theory proposed by Gregory? Write a short note on this theory.

4. Describe the dentitions of four representatives of the Carnivora. Indicate the possible phylogenetic relationships of these.

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FIRST DENTAL YEAR

MICROSCOPIC ANATOMY

Examiners—The Staff in Microscopic Anatomy

All questions of equal value.

1. Describe the process of intramembranous ossification and explain how any given piece of bone can change in size and shape. Illustrate.

2. Describe the formation and final structure of enamel.

3. Describe the microscopic structure of the periodontal membrane and explain how it is attached to the tooth and alveolar bone.

4. Give, in chart form, a complete classification of the tissues of the body. No illustrations are necessary.

5. Describe the structure of the adrenal gland and comment on how the secretory functions of its different parts are controlled.

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SECOND DENTAL YEAR

BACTERIOLOGY

Select an example of *each* of the following bacteria; give name, outline morphological and cultural characteristics and name diseases that it may cause:

Marks

20 1. Gram positive coccus

20 2. Gram negative coccus

20 3. Gram negative rod

20 4. Gram positive rod

20 5. Acid fast rod.

UNIVERSITY OF TORONTO
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ANNUAL EXAMINATION, FEBRUARY, 1953

SECOND DENTAL YEAR

BIOCHEMISTRY

Examiner—J. MANERY FISHER

Answer FOUR *questions.*

1. (*a*) Describe the chemical composition of tooth enamel.

(*b*) Discuss the role of phosphatase in bone formation.

(*c*) Explain, using formulae, the ricket-producing action of cereals.

2. Discuss the quotation "Fats burn in the flame of carbohydrates".

3. (*a*) What is meant by "essential" amino acids? Name those found to be "essential" for humans.

(*b*) Write a concise description of the metabolism of glycine.

4. (*a*) Describe the cytochrome system under the following headings:

  (i) its chemical constitution,
  (ii) its biological function.

(*b*) Explain clearly how the function of iron in cytochrome differs from its function in hæmoglobin.

5. Write a short account of each of the following:

(*a*) the action of alkalis on monosaccharides,

(*b*) cholesterol, its chemical constitution and metabolism,

(*c*) the nature of the bile salts and their function in the intestinal absorption of fatty acids,

(*d*) transamination.

6. Write a short essay on the topic "Methods used in the study of the intermediary metabolism of food stuffs". Use a specific experiment where possible to illustrate each method described.

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ANNUAL EXAMINATIONS, MAY, 1953

SECOND DENTAL YEAR

OPERATIVE DENTISTRY

All questions are of equal value.

1. Enumerate the principles involved in the preparation of any three quarter cast gold crown. Under each principle list the factors which ensure the success of the restoration.

2. The daily execution of operative procedures requires a set plan in mind. In the light of your present operative experience describe in tabulated form your plan as you are assigned the preparation and restoration of a Class III Gold Foil.

3. Discuss briefly the following filling materials under the headings; (1) indications; (2) contra-indications:
    (*a*) Amalgam
    (*b*) Gold Inlay
    (*c*) Silicate
    (*d*) Gold Foil
    (*e*) Cement.

4. (*a*) What are the requirements of an ideal space-maintainer?
    (*b*) What are the differences in cavity preparation between the deciduous and permanent dentition?

5. (*a*) The investment, heating, and casting of an inlay pattern involves a standard procedure. Enumerate your standardized technique giving your reasons for so doing.
    (*b*) Explain and illustrate the terms:
        (i) Contact
        (ii) Contour
        (iii) Occlusion.

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ANNUAL EXAMINATIONS, MAY, 1953

SECOND DENTAL YEAR

PHARMACOLOGY

Write plainly. Up to 5 marks will be added for neatness, legibility and concise answers.

Marks

15. 1. Discuss nitrous oxide as a general anaesthetic in dentistry, comparing its advantages and disadvantages with those of cyclopropane.

15 2. Write brief notes on Oil of Clove, Ferric Chloride, and Trichloracetic Acid.

16 3. Name three drugs routinely employed as respiratory stimulants. Describe the advantages and disadvantages of two of them.

15 4. What use is made of antipyretic drugs in dentistry? Illustrate your answer by describing the action of one antipyretic drug.

15 5. How may salivary secretion be increased? Illustrate your answer by citing examples and stating the site of action of each drug.

10 6. Prescribe a haustus containing 30 mg. of Codeine Phosphate flavoured with Syrup of Orange.

9 7. Give synonyms, common dosage forms, and mode of administration of Pentobarbitone and Hyoscine.

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ANNUAL EXAMINATIONS, MAY, 1953

SECOND DENTAL YEAR

PHYSIOLOGY

Marks allotted

25 1. (*a*) Describe the nature of lymph fluid and discuss the factors that influence the rate of its formation.

(*b*) Describe the factors that are involved in the return of blood to the heart.

20 2. Describe the various processes in the kidney involved in the formation of urine.

15 3. Discuss the means whereby changes in the chemical composition of the blood influence the rate and depth of respiration.

25 4. (*a*) Outline the factors that determine to what extent a muscle fibre will contract when stimulated by a single shock.

(*b*) Write a note on tonus in muscle.

15 5. Write notes on:—

(*a*) Prothrombin.

(*b*) Factors determining the concentration of sugar in the blood.

Third Dental Year
Accounting

UNIVERSITY OF TORONTO
FACULTY OF DENTISTRY

ANNUAL EXAMINATIONS, MAY, 1953

THIRD YEAR DENTAL STUDENTS

AND DENTAL NURSING

ACCOUNTING

Marks

25 1. Give the definition for the following terms used in double entry bookkeeping:

(*a*) Account	(*d*) Bills Payable
(*b*) Capital	(*e*) Inventory
(*c*) Accounts Receivable	(*f*) Depreciation.

75 2. Dr. G. A. Forth has asked you to take care of his books for the month of April. Prepare a Profit and Loss Statement. Keep a supplemental ledger for dental nurse's salary.

April 1. Invested $1000 in dental practice.

2. Bought dental equipment $1600 from Ontario Dental Supply House. Gave them a cheque for $500; and two post-dated cheques, one dated July 10 for $500 and other dated October 10 for $600. (Open a supplemental ledger)

3. Bought stationery and magazines for $125. Paid by cheque.

4. Paid April rent for $150 by cheque.

5. Bought two chairs and a settee for reception room. Paid by cheque $350.

6. Paid dental assistant's salary for week $50 by cash, less Unemployment insurance .44 cents, less income tax deduction of $10. The dental assistant is paid again on the 13th, 20th, and 30. Same amount is paid on each pay day. (Open supplemental ledger)

30. Paid the following accounts by cheque: Toronto Towel Supply Co., $20; Ross and Jones for lab. work, $36.50; Brown and Smith for lab. work, $40; Janitor's salary, $50; Hydro Account, $3.50; Bell Telephone, $14.25; Petty Cash Expenses, $9.33; Dr. Forth's personal withdrawal, $300; Dental Supplies from Ontario Dental Supply House, $135.65; and Toronto Window Cleaners, $3.50.

He estimates the depreciation on his equipment to be $40, and dental supplies used $80.

Dr. G. A. Forth's receipts are as follows:

April 1.	$14.25	April 20.	$12.50
2.	10.00	21.	110.00
5.	60.00	24.	53.50
6.	79.50	26.	143.25
7.	89.35	27.	80.50
8.	120.00	28.	15.00
11.	150.00	29.	140.00
12.	155.50	30.	12.00
15.	18.00		
17.	28.45		

Prepare a patient's ledger card for:

1. Arthur Roberts, 12 Main Street, Oakville, Telephone 250. Estimate given was $75. Work completed on April 20. Amount owing $75. Sent bill, dated April 30.
2. Mrs. John Roberts, 12 Main Street, Oakville, Telephone 250. No estimate given. April 2 paid $5; April 15 paid $10; April 20 paid $5; April 28 paid $15. Work not completed—do not bill.
3. John King, Navy Street, Weston, Telephone 2-345J. Estimate given was $126.50. April 5, Fillings $15, April 19, charge $60. April 25 partial $51.50. Work completed, sent bill dated April 29. No payments made during April. Any payments made by the three patients have already been included in Daily Receipts.

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ANNUAL EXAMINATIONS, MAY, 1953

THIRD DENTAL YEAR
DENTAL SURGERY AND ANAESTHESIA

Marks

15 1. Name the ingredients of a modern local anaesthetic solution and discuss fully the action of each ingredient.

20 2. Make a diagrammatic sketch of the nerve supply to the dental area of both the mandible and maxilla and clearly label the various nerve branches.

15 3. Describe in detail the correct method of making a tuberosity (zygomatic) injection, and discuss all the anatomical structures of significance when making this injection.

15 4. Discuss the principles involved in making muco-periosteal flaps for the extraction of teeth and make diagrammatic sketches showing the following flaps:

(*a*) for the removal of the root apex of a lower second bicuspid

(*b*) for the removal of an impacted third molar

(*c*) for the removal of the apex of the palatal root of an upper first bicuspid.

15 5. Describe both the chair side and operating positions that should be assumed by the operator during the extraction of the lower incisors, and indicate the forcep that is commonly used.

20 6. Discuss concisely the surgical preparation of the mouth for the insertion of an immediate upper denture, indicating the basic principles in alveolar contouring and the pitfalls that should be avoided to ensure maximum success.

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ANNUAL EXAMINATIONS—JANUARY, 1953

THIRD DENTAL YEAR

NUTRITION

All questions are of equal value.

1. (*a*) How is the Caloric value of foodstuffs determined?
   (*b*) What factors influence the Basal Metabolism of the body?

2. Discuss *briefly* the function of each of the following in human nutrition:
   (1) Vitamin A
   (2) Ascorbic Acid
   (3) Thiamin
   (4) Vitamin D
   (5) Riboflavin
   (6) Niacin
   (7) Calcium
   (8) Iron
   (9) Protein
   (10) Carbohydrates and fats

3. (*a*) List Canada's Food Rules.
   (*b*) What one particular food or food group would you advise for a patient whose diet had been found to be low only in:
   (*a*) Thiamin
   (*b*) Riboflavin
   (*c*) Vitamin C
   (*d*) Iron
   (*e*) Vitamin A
   (*f*) Calcium
   (*g*) Vitamin D

4. What cheaper foods would you recommend to replace
   (1) Whole milk
   (2) Orange juice
in the diet of a child in normal health—give at least two for each.

In what other way is it possible to improve the diet and at the same time reduce the cost.

5. (*a*) List the refined cereals commonly eaten.
   (*b*) List the whole grain cereals commonly eaten.
   (*c*) What are the citrus fruits?
   (*d*) What foods are most important as sources of vitamin A and carotene.
   (*e*) What types of milk are commonly used. Compare as to nutritive value.

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ANNUAL EXAMINATIONS, MAY, 1953

THIRD DENTAL YEAR

ORTHODONTICS

Instructions: Include sketches in each answer.

1. Examination of patient.
Tabulate your method of examining an orthodontic patient.

2. Diagnosis.
(*a*) What is an ectopic eruption?
(*b*) What is its significance?

3. Preventive procedures.
What orthodontic preventive procedures appear to be the most useful?

4. Myofunctional therapy.
(*a*) Detail the signs of a tongue thrusting habit.
(*b*) Give the instructions for myofunctional therapy indicated in its treatment.

5. Appliance construction.
Describe a method of band construction for a mandibular first permanent molar.

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THIRD DENTAL YEAR

PATHOLOGY

Marks

20 1. Name and discuss the "cardinal" signs of inflammation.

20 2. Contrast the histological evidence of inflammation and malignancy.

20 3. Discuss *embolism.*

20 4. Contrast two theories as to the embryological origin of the ameloblastoma.

20 5. Distinguish between capillary haemangioma, granuloma pyogenicum, and the so-called pregnancy gingivitis.

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THIRD DENTAL YEAR

PERIODONTICS

Answer ALL *questions in point form or with diagrams.*

Marks

20 1. Describe in detail the normal gingivae.

10 2. (*a*) Based on radiographic evidence, differentiate between a moderate Periodontitis Simplex and a moderate Periodontitis Complex.

10 (*b*) What are the most typical clinical differences between these two disease entities?

5 3. (*a*) What is the difference between a gingival pocket and a true periodontal pocket?

15 (*b*) What methods might be employed to eliminate a 6 m.m. pocket of each type?

5 4. (*a*) When is oxygen therapy indicated in the treatment of the periodontal tissues?

5 (*b*) What benefits may be expected from oxygen therapy?

10 (*c*) Give in detail the technique for one method of oxygen therapy.

20 5. Give the signs and symptoms of acute necrotic gingivitis.

100

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ANNUAL EXAMINATIONS, JUNE, 1953

THIRD YEAR

PROSTHODONTICS

Write legible and concise answers.

Marks

15 1. Give an account of the use and the necessity of employing a surveying instrument in planning removable partial denture service for a patient.

20 2. Compare the fabrication of wrought and cast metal frameworks for removable partial denture appliances from the standpoint of construction technique.

20 3. In complete denture prosthesis:

(*a*) What is your conception of balanced occlusion?

(*b*) What are the purposes of arranging teeth in balanced occlusion?

(*c*) What registrations of the patient's jaw relations are essential to obtaining a balanced occlusion?

(*d*) What method is used to perfect the occlusion after processing the dentures before insertion in the mouth?

15 4. Write short notes on the following topics related to complete denture prosthesis.

(*a*) The general requirements of a good impression.

(*b*) The physical properties of materials necessary to obtain a good impression.

(*c*) The essential steps in producing a good impression.

15 5. Describe briefly the method of employing alginate *or* agar hydrocolloid impression material for securing impressions and making the dies and the cast for a fixed bridge on completion of the abutment preparations.

15 6. Discuss pontics for fixed bridge work from the standpoints of types, form and relation to ridge for the replacement of the following teeth:

(*a*) a maxillary central incisor;

(*b*) a maxillary bicuspid tooth;

(*c*) a mandibular first molar tooth.

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ANNUAL EXAMINATIONS, JUNE, 1953

THIRD DENTAL YEAR

SURGERY

1. Describe the various ways in which a fracture may be displaced. Discuss the factors which produce the displacement of fractures.

2. Define:

    (*a*) Suppuration
    (*b*) Laceration
    (*c*) Symbiotic infection
    (*d*) Dry Gangrene.

3. Define ulceration and discuss the broad principles of treatment of ulcers.

4. Describe the clinical characteristics of any tumor which would lead one to suspect that it is malignant.

5. Discuss salivary calculi on the basis of location, composition, symptoms produced and treatment.

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ANNUAL EXAMINATIONS, MAY, 1953

FOURTH DENTAL YEAR

DENTAL PRAXIS

A. HISTORY, JURISPRUDENCE AND ETHICS

Use separate Examination Book.

Marks

25 1. Write notes on the following:
Prescriptions
Contract for services
Evidence in court
Origin of law
Consent for treatment.

15 2. (*a*) Define negligence

(*b*) State preventive measures which may be taken to guard against malpractice actions.

15 3. Write a short essay upon the following subject:
The Meaning of a Profession.

15 4. Write historical notes on the development of dentistry in Canada.

B. PRACTICE MANAGEMENT

Use separate Examination Book.

15 1. Enumerate and explain *briefly* all the factors that in your estimation are essential for building and maintaining a successful practice.

15 2. Assuming that you are planning to set up your fees on an hourly basis, discuss the factors you would include in determining the hourly rate.

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FOURTH DENTAL YEAR

GENERAL SURGERY, DENTAL SURGERY AND ANAESTHESIA

Questions are to be answered in Separate Books, as follows:
Question 1—*one book.*
" 2—*one book.*
" 3–6—*one book.*

1. Discuss the differential diagnosis of tuberculous cervical adenitis. Describe the various clinical courses this disease may take, and the factors of resistance which modify its clinical course.

2. (*a*) Discuss the diagnosis of fracture of the mandible.

(*b*) Discuss the management of a fracture of the condyle of the mandible.

Marks

15 3. (*a*) Discuss dental haemorrhage, from both the local and systemic standpoint.

(*b*) What factors would lead you to suspect that bleeding was of systemic origin?

(*c*) Outline the treatment of dental haemorrhage that is of proven local origin.

15 4. Make a diagrammatic sketch of a cross-section of the ramus of the mandible at the level of the lingual, showing all the anatomical structures of significance in making a mandibular injection, and describe the correct method of making this injection.

15 5. Describe the correct surgical procedures for the removal of a hyper-cementosed root apex of a lower second bicuspid that has fractured during extraction of the tooth.

15 6. Describe or tabulate in detail the signs and symptoms of all four stages of nitrous oxide-oxygen anaesthesia. What would be the first indications that should warn you that the patient is becoming too deeply anaesthetized?

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FOURTH DENTAL YEAR

MEDICINE

1. A man, fifty years of age, suffering from gouty arthritis is referred to you for assessment and treatment of his oral condition. He has several non-vital teeth and one acute alveolar abscess.

(*a*) Write a letter to his doctor outlining your course of treatment and the reasons for your proposals.

(*b*) Describe the probable history and findings in gout and gouty arthritis.

2. Write a note on (1) Cardiospasm, (2) Sciatica, (3) Addison's Disease, (4) Paget's Disease.

3. Describe the symptoms and signs of Cardiac Failure.

4. (*a*) Describe the examination of the cranial nerves.
(*b*) Discuss a disease of one of the cranial nerves.

5. Write a brief note on (1) Ptyalism, (2) Heartburn, (3) Hyperthryoidism, (4) Angina Pectoris.

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FOURTH DENTAL YEAR

OPERATIVE DENTISTRY

1. Describe briefly:

(*a*) The technic you would employ to disclose the root canals of a vital lower first molar without damage to the floor of the pulp chamber.

(*b*) The precautions which you would observe while extirpating a vital pulp from a maxillary central incisor, to reduce subsequent coronal discoloration to a minimum.

2. Outline briefly, and in its proper sequence, how you would proceed to make a thorough examination for a patient who comes to your office and suggests you are to be entrusted with the welfare of the patient's mouth.

3. (*a*) To what extent does the age factor of patients enter into dental treatment from an operative point of view, taking into consideration the tooth itself and also its supporting structures?

(*b*) What do you consider to be the most important factors in assisting the dentist in good cavity preparation?

4. Enumerate the factors which enter into the diagnosis and treatment planning for the following types of injuries to a maxillary central incisor in the child patient:

(*a*) Crown fracture with pulp exposure
(*b*) Root fracture without involvement of the crown
(*c*) Displaced tooth.

5. Write a brief statement concerning the diagnosis of pain of dental origin.

IV Dental Year.

Orthodontics and Pedodontics

UNIVERSITY OF TORONTO
FACULTY OF DENTISTRY

ANNUAL EXAMINATIONS, MAY, 1953

FOURTH DENTAL YEAR

ORTHODONTICS AND PEDODONTICS

PART A. ORTHODONTICS

Write in a separate book.

1. Give the differential diagnosis of the structural and functional factors in a Class II div. 1 malocclusion.

2. (*a*) What is the mixed dentition stage?
(*b*) What are the implications of the premature eruption of the second permanent molars?

3. If the response to orthodontic treatment of a case is poor, analyse the factors which might be responsible.

4. A patient age 8½ years presents with a periodontal problem associated with marked crowding of the mandibular permanent incisors. Detail your treatment plan.

5. What are the indications for the use of headcap type anchorage?

PART B. PEDODONTICS

Write in a separate book.

Answer any FOUR *of the 5 questions.*

1. A child, four years of age, has multiple loss of mandibular primary molars. The remaining teeth may be adequately restored. Discuss from a standpoint of space maintenance the management of this case during the mixed dentition period.

2. Write a note on the differential characteristics between hereditary dentinogenesis imperfecta (opalescent dentin) and hereditary amelogenesis imperfecta.

3. (*a*) Define "ectopic eruption".
(*b*) In what areas of the mandible and the maxillae does this condition appear most frequently?

4. (*a*) A child, eleven and one-half years of age, has a carious lesion on the distal surface of the second primary molar. What factors would you consider in deciding whether this tooth is to be removed or restored?

(*b*) Should you decide that extraction is indicated for the above patient what factors will determine whether a space maintainer is necessary or not?

5. (*a*) The first permanent molar may erupt into two distinct occlusal relationships. Describe these two occlusal patterns.

(*b*) What growth and developmental factors in the primary dentition determine the type of occlusal relationship that the first permanent molars will assume on eruption.

UNIVERSITY OF TORONTO
FACULTY OF DENTISTRY

ANNUAL EXAMINATIONS, MAY, 1953

FOURTH DENTAL YEAR

PERIODONTICS

Marks

20 1. (*a*) Describe briefly methods of determining normal centric occlusion for a patient.

(*b*) Describe a method of determining the applicability of occlusal correction by grinding for eccentric functional activities of the teeth.

20 2. (*a*) Enumerate the three main divisions of therapy for periodontal disease.

(*b*) Outline a rational system for the therapy of periodontal pockets.

20 3. Describe briefly the favorable effects of vigorous function and wear of the teeth on jaws and periodontal tissue.

10 4. (*a*) Describe using a drawing, a pericemental abscess.

10 (*b*) Outline signs and symptoms.

10 (*c*) Outline treatment for a pericemental abscess.

10 5. Describe the clinical manifestations of mouth-breathing gingivitis.

UNIVERSITY OF TORONTO
FACULTY OF DENTISTRY

ANNUAL EXAMINATIONS, MAY, 1953

FOURTH DENTAL YEAR

PREVENTIVE DENTISTRY AND DENTAL PUBLIC HEALTH

1. Discuss the possible influence exerted by the oral flora in patients with relative caries immunity.

2. Name and discuss one type of allergy that may be encountered in a dental practice.

3. A request has come to you for some advice in respect to a need in the community where you practice for an organized program of dental health education.

(*a*) State briefly, the procedure you would advise in organizing such a program.

(*b*) What reasons would you give your fellow practitioners for the need of their participation in such a program?

(*c*) It has been stated that, "dental health education results in more demands on the dentist for dental care than he can provide". Relate very briefly, what would be your answer to this statement.

4. What evidence is there to support the belief that refined carbohydrates contribute to the production of dental caries?

5. In the dental care for children evaluate the following:
(*a*) Pre-operative X-rays.
(*b*) The premature loss at age 4 of a deciduous 2nd molar.
(*c*) The premature loss at age 8 of a lower deciduous cuspid.
(*d*) Ectopic eruption of an upper permanent 1st moar.

Fourth Dental Year

Prosthodontics

UNIVERSITY OF TORONTO
FACULTY OF DENTISTRY

ANNUAL EXAMINATIONS, MAY, 1953

FOURTH DENTAL YEAR

PROSTHODONTICS

Write legible and concise answers.

Marks

20 1. Draft suitable designs for removable partial dentures and give reasons for your choice of designs:

(*a*)

$$\begin{array}{l|l} \text{R} & \text{L} \\ \hline 7\quad 4321 & 123\quad 7 \end{array}$$

$\overline{7|7}$ are tipped somewhat to mesial and lingual

(*b*)

$$\begin{array}{l|l} \text{R} & \text{L} \\ \hline 8\quad 54321 & 1234 \end{array}$$

(use diagram stickers)

15 2. In removable partial denture prosthesis it is generally agreed that stresses applied to the appliance should be within the physiologic limits of the supporting structures in order to prevent a breakdown of these structures.

Discuss how occlusal forces may be distributed or limited to prevent irritation, traumatism and damage to the remaining natural teeth and residual ridge tissues.

15 3. Describe the preparation of a maxillary central incisor for a cast gold crown with acrylic resin facing and give a brief description of the construction of the attachment for this tooth to be used for a fixed bridge.

15 4. A patient presents with the maxillary right first bicuspid tooth missing and the ridge fully healed and a maxillary right lateral incisor which must be extracted. State a satisfactory method of replacing these two teeth by fixed bridge work and specify:

(*a*) What teeth you would use for abutments;

(*b*) The steps in the preparation of the abutment teeth;

(*c*) The procedure for the construction of the replacement.

20 5. A patient for whom complete dentures have been recently inserted returns with the following complaints:

(*a*) The mandibular denture raises up when speaking;

(*b*) There is an abrasion on the lingual side of the anterior part of the mandibular ridge midway between the crest and the base of the ridge;

(*c*) The maxillary denture loosens on the right side when he bites a bolus of food on the left side;

(*d*) When he closes his teeth together the mandibular denture hurts the tissues at the lingual flange on the left side.

State briefly what may be the causes and how each of these conditions may be corrected.

15 6. A patient presents with the following history and clinical conditions:

The maxillary teeth were extracted ten years ago and a new maxillary denture must be constructed. The posterior ridges are fairly flat and very hard and the ridge in the anterior region is flabby.

The mandibular six anterior teeth remain but are loose and should now be extracted. The posterior ridges are favourable.

Describe briefly:

(*a*) How you would make the maxillary impression.

(*b*) How you would make the mandibular impression.

(*c*) What jaw relation records you would take for this patient.

UNIVERSITY OF TORONTO
FACULTY OF DENTISTRY

ANNUAL EXAMINATIONS, MAY, 1953

DENTAL HYGIENE—FIRST YEAR

CHEMISTRY

Examiner—J. Scott

Candidates will answer Question 1 *and any other* FIVE *questions.*

1. Give balanced equations for the following:

(*a*) formation of a sodium soap from the fat tripalmitin,

(*b*) reduction of glycerol on heating with potassium bisulphate,

(*c*) reaction when Fehling's solution is boiled with acetaldehyde,

(*d*) reactions when glucose is fermented by yeast, then dilute sodium hydroxide is added. (2 equations)

(*e*) reaction when silver nitrate is added to a sodium chloride solution forming a white precipitate. Ammonia is added and the precipitate disappears. (2 equations)

2. Describe what is meant by "hydrogenation" of an oil—illustrating with an equation. Give two examples of hydrogenated oils which are sold on today's market.

3. Describe primary, secondary and tertiary alcohols, giving an example of each and explaining the effects of oxidation in each case.

4. Write a note on milk telling why it is considered the nearly perfect food.

5. Write a note on eggs under *three* of the following headings: (*a*) protein, (*b*) fat, (*c*) mineral constituents, (*d*) pH.

6. Give three ways in which ash constituents act in general in the body. Name six elements and tell their form of combination in the body and the way in which each element acts.

7. Write brief notes on *two* of the following:

(*a*) digestion of protein,

(*b*) the role of the bile salts in fat digestion,

(*c*) the role of the calcium ion in (i) coagulation of milk, (ii) clotting of blood.

UNIVERSITY OF TORONTO
Faculty of Dentistry

DENTAL ANATOMY

FINAL EXAMINATION

Dental Hygienists First Year

February 27, 1953

PART A

Answer True (T) or False (F) to each of the following questions in the space provided.

..... 1. The cingulum is a roll of enamel found only on the lingual surface of upper anterior teeth.

..... 2. $\overline{7/7}$ are the first permanent teeth to erupt into the oral cavity.

..... 3. The cervical line is always located around a tooth at the level of the gum.

..... 4. The mesial contact point of the upper cuspid is further from the cervical line than is the distal contact point.

..... 5. The clinical crown of a tooth is that portion which projects above the gum.

..... 6. Cementum forms one of the tissues of attachment for the periodontal membrane.

..... 7. $\underline{/e}$ is replaced in the arch by the upper right second bicuspid.

..... 8. The lingual cusp on the upper first bicuspid is non-functional.

..... 9. The oblique ridge of the upper permanent first molar unites the mesio-lingual and disto-buccal cusps.

..... 10. The lower first molar is the widest tooth mesio-distally in the permanent arch.

..... 11. The bifurcation in permanent molars is proportionately further from the cervical line than it is in deciduous molars.

..... 12. There is greater constriction at the cervical line in deciduous teeth than in permanent teeth.

..... 13. One would expect to find all of the bicuspid teeth in the mouth of a child eight years old.

Part A, cont'd.

..... 14. The disto-lingual cusp is the smallest cusp on the lower first molar.

..... 15. During his lifetime the normal human being would have fifty-two teeth erupt into his mouth.

..... 16. The interproximal space between two teeth is located occlusally or incisally from the contact area.

..... 17. $\overline{6/6}$ have longer roots than any other teeth in the permanent dentition.

..... 18. The mandibular permanent incisor teeth are wider mesio-distally than they are labio-lingually.

..... 19. The mesial and distal contact points of the upper central incisor are an equal distance from the incisal edge of the tooth.

..... 20. When seen from the mesial side the incisal edge of the lower incisor teeth is labial to the long axis of the tooth.

..... 21. The combined mesio-distal widths of the upper premolars is less than the combined mesio-distal widths of the upper deciduous molars.

..... 22. The mesial contact point of the upper first bicuspid is situated farther lingual than is the distal contact.

..... 23. The mesial developmental depression is confined to the coronal portion of the upper first premolar.

..... 24. The mesial cusp ridge of the buccal cusp of the lower first bicuspid is shorter than the distal cusp ridge.

..... 25. The central pit of the lower second premolar is situated half way between the buccal and lingual sides of the crown.

Part B - page 3

PART B

Fill in the blank spaces in the following sentences with the appropriate word or symbol.

1. The upper first permanent molar tooth erupts into the mouth at about ..... years of age. This tooth is wider .... than it is .... It has .... cusps which are named .... The .... ridge crosses the occlusal surface of the tooth uniting the .... cusp with the .... cusp. The tooth has .... roots which are named as follows .... The .... root is the longest one.

2. The lower succedaneous central incisor is .... mesio-distally than is the lower permanent lateral incisor. The lower central is wider .... than it is .... There are generally marked .... on the sides of the roots of this tooth which serve to .... the attachment of the periodontal fibres which run from .... to the .... thus holding the tooth in its ....

3. The upper first permanent premolar replaces the .... in the arch when it erupts at about .... years of age, generally has .... roots which are named .... This tooth contacts the .... mesially and the .... distally. It has .... cusps of which the .... is the shorter. On the occlusal surface one finds a .... and .... pit joined by the .... groove.

4. The maxillary and mandibular cuspid teeth are the .... teeth in the arch. They are situated in the arch between the .... mesially and the .... distally. When the jaws are closed in centric relation the distal cutting arm of the lower cuspid contacts the .... cutting arm of the upper. In both teeth the shorter of the two cutting arms is the .... one, which happens because the mesial contact point is .... cervico-incisally than is the distal one.

5. The fifth tooth from the mid line in the mandibular arch is the .... , which contacts .... mesially and the .... distally. It has .... cusps generally, which are named for their location as follows .... This tooth generally has .... root.

UNIVERSITY OF TORONTO
FACULTY OF DENTISTRY

ANNUAL EXAMINATIONS, MAY, 1953

DENTAL HYGIENE—FIRST YEAR

DENTAL HYGIENE AND ORAL PROPHYLAXIS

1. State briefly:

(*a*) What are the objectives of tooth brushing?

(*b*) What principles and technical procedures need to be employed to satisfy these objectives?

(*c*) Describe a well designed tooth-brush.

(*d*) Describe the desirable qualities of a dentifrice.

2. Outline briefly, what does complete mouth prophylaxis include?

3. (*a*) Outline briefly a *general* classification of scalers, using diagrams.

(*b*) Discuss briefly the sterilization of scalers.

(*c*) Show diagrammatically the formation of calculus within a pocket.

4. Answer True or False. Do not guess.

(*a*) If gingival tissues do not bleed easily, no periodontal disease is present.

(*b*) Calculus causes rapid pocket deepening.

(*c*) Calculus formation is caused mostly by heavy smoking.

(*d*) Subgingival calculus is usually harder than supragingival calculus.

(*e*) A high vitamin C intake prevents gingivitis.

(*f*) Superficial scaling should precede displacement packing.

(*g*) More adult teeth are lost by periodontal disease than by caries.

(*h*) Periodontal disease is contagious.

(*i*) Fluoridation of water supply will decrease the incidence of periodontal disease.

(*j*) Inflammation increases calculus formation.

UNIVERSITY OF TORONTO
Department of Zoology

Annual Examinations, January, 1953

Dental Hygiene I

ELEMENTARY EMBRYOLOGY

1. (a) On the diagram of the developing animal, locate the blood vascular system. Then colour the vessels, assuming that the animal obtains its oxygen from the water. Show vessels carrying oxygenated blood, as red, and vessels which would carry deoxygenated blood, as blue. Colour the heart accordingly. Indicate with arrows, made with ink, the direction of the blood stream.

   (b) Label all the parts indicated with guide lines, using ink.

   (c) Colour the guide lines to the various parts with the standard colour used for the germ layer from which the part arose.

2. Construct a table showing the origin of the primary tissues and organ systems from the germ layers of the early embryo.

DENTAL HYGIENE - FIRST YEAR

ENGLISH COMPOSITION

and

ENGLISH LITERATURE
1953

see

Predental Year

Dental Hygiene - Third Year

Gross Anatomy and Anatomy of the Head and Neck.

UNIVERSITY OF TORONTO
FACULTY OF DENTISTRY

ANNUAL EXAMINATIONS, MAY, 1953

DENTAL HYGIENE—FIRST YEAR

GROSS ANATOMY AND ANATOMY OF THE HEAD AND NECK

PART A—GROSS ANATOMY

Be relevant. Write legibly.
Use examination book for PART A.

1. Trace the course of the blood through the heart, naming in order the chambers and valves through which it passes.

2. Name the structures that pass into or out of the liver at the portal fissure, and state the functions of each.

3. Draw a large diagram of the stomach and name its parts fully.

4. What is cortex and where is it found?
Locate the voluntary motor area in the cerebral hemisphere.

PART B—ANATOMY OF THE HEAD AND NECK

Answer True (T) or False (F) to *each* of the following questions in the space provided.

.... 1. The only purpose of the lymphatic vessels is to ensure adequate drainage.

.... 2. The mandibular arch is the first branchial arch.

.... 3. The mental foramen is located on the inner surface of the ramus of the mandible.

.... 4. The external pterygoid muscle assists in opening the jaws.

.... 5. All of the muscles of facial expression originate from some point on the skull and insert into the skin of the face.

.... 6. Part of the pituitary gland originates embryologically from the roof of the primitive mouth.

.... 7. The parotid, submandibular and sublingual glands are the only salivary glands in the oral cavity.

.... 8. Muscles situated below the hyoid bone have no influence on the movements of the mandible.

.... 9. The Facial nerve supplies motor innervation to the orbicularis oris muscle.

.... 10. The maxillary sinus drains into the middle meatus of the nose.

.... 11. The quadratus labii superiorus muscle assists in raising the corner of the mouth.

.... 12. Sensory impulses originating in the lower bicuspid teeth are carried to the brain through the fibres of the third division of the fifth cranial nerve.

.... 13. Blood supply to the palate is carried almost entirely by branches of the internal maxillary artery.

.... 14. The muscles of the tongue receive their motor innervation from the trigeminal nerve.

.... 15. The maxillary bone assists in the formation of the orbit.

Part C

Fill in the blank spaces in the following sentences with the appropriate word or words.

1. Blood which enters the socket after extraction of the upper first molar tooth reached the socket after passing through the ....branch of the .... artery, which is, in turn, one of the main branches of the .... artery.

2. The hard palate is composed of parts of two bones : the .... process of the .... bone forms the anterior part, and the .... process of the .... bone forms the posterior part. Innervation of the palate is through two main branches of the .... division of the .... nerve. The posterior and middle part of the palate is supplied through the .... nerve, and the anterior part of the palate is supplied by the .... nerve.

3. The coronoid process of the mandible serves as a point of attachment of the .... muscle. This muscle has two actions. It acts to .... the mandible as well as to .... it. It receives motor innervation through the .... branch of the .... nerve.

4. One of the three main salivary glands is the .... gland, which is located on top of the .... muscle which forms the floor of the mouth. The other two main salivary glands are the .... and the ....

UNIVERSITY OF TORONTO

School of Physical and Health Education

Annual Examinations, 1953

Dental Hygiene I

HEALTH EDUCATION

1. Mention the chief properties of bone and describe in brief and concise terms how bone changes from birth to old age.

2. Describe the fundamental structures that enter into the composition of a freely movable joint. State the functions or uses of each structure you mention. Be definite and avoid vague generalizations.

3. Write 10 lines of specific and useful information about each of the following:
   (a) hypertrophy and hyperplasia
   (b) arteriole
   (c) pleura
   (d) villus

4. Smooth muscle is found chiefly in the walls of tubes and hollow organs. Describe how it functions in these situations. Give six important differences between smooth and striated muscle.

5. Name some important factors that contribute to the health of a voluntary muscle. In each case give full explanations.

6. Name the chief structures found in the nasal cavity and state how each affects the entering air. Do not include the naso-pharynx.

UNIVERSITY OF TORONTO
FACULTY OF DENTISTRY

ANNUAL EXAMINATIONS, MAY, 1953

DENTAL HYGIENE—FIRST YEAR

HISTOLOGY

Examiner—Miss W. C. Riddle

Marks

25 1. Describe, with illustrations, the microscopic structure of dentin. Discuss its formation in the crown of a tooth.

15 2. Describe the microscopic structure of the gingiva. Make a sketch to show the position of the epithelial attachment on the tooth crown.

10 3. Discuss the function of the tooth pulp and describe its cellular elements.

UNIVERSITY OF TORONTO
FACULTY OF DENTISTRY

ANNUAL EXAMINATIONS, MAY, 1953

DENTAL HYGIENE—SECOND YEAR
DENTAL HYGIENE AND ORAL PROPHYLAXIS

1. Of what types or degrees of gingivitis are the following signs or symptoms indicative?

(*a*) Bright red colour of gingivae.

(*b*) Bluish red colour of gingivae.

(*c*) Interdental papillae appear cut off and cupped out.

(*d*) Marked swelling of gingivae, labial surface, anterior teeth.

(*e*) Generalized enlargement of gingivae, firm consistency and fairly normal colour.

2. Describe using drawings, the sequence of events in the formation of a periodontal pocket.

3. (*a*) List 5 purposes of fibrous packing.

(*b*) List 3 purposes of non-fibrous packing.

(*c*) What is difference in composition of fibrous and non-fibrous packing?

(*d*) What is main difference in the method of application of the two types of packing?

(*e*) The fibrous or displacement packing is usually left in place for what period of time?

4. (*a*) Briefly discuss calculus formation.

(*b*) Why do we remove calculus?

(*c*) What are the most common areas of the mouth with heavy supragingival calculus?

5. (*a*) Briefly outline the oral hygiene instruction that you would give to your patient.

(*b*) Describe a well designed tooth brush.

UNIVERSITY OF TORONTO
FACULTY OF DENTISTRY

ANNUAL EXAMINATIONS, MAY, 1953

DENTAL HYGIENE—SECOND YEAR

DENTAL PUBLIC HEALTH

1. There are certain statutes in Canada which deal with the health and welfare of the people.

Name the acts which established departments of health in the federal and the provincial (Ontario) government.

Describe some of the functions of such departments of health.

2. Prepare a brief outline of a lesson you expect to teach on oral hygiene to a class of children who are eight and nine years of age.

3. The dental health officer in a Health Unit where you are employed has asked you to follow up the case of a child, age 5, who has rampant dental caries. It is expected the child may lose the primary molar teeth prematurely.

Describe briefly:

(*a*) What information would you seek from the parent?

(*b*) What advice would you give the mother?

(*c*) How would you describe the presently accepted theory of the disease?

(*d*) What dental services would you expect the family dentist to render?

What reasons would you give the mother for the need of such services?

4. Write brief notes on *two* of the following:

(*a*) Functions of the Dental Hygienist in
    (i) Private practice.
    (ii) Public health.

(*b*) Media which may be used in health education.

(*c*) Requirements in good public relations.

5. (*a*) Describe the dental criteria which should be observed and recorded in the examination of school age children.

(*b*) How may such an examination and the resulting information be used in dental health education?

UNIVERSITY OF TORONTO
Faculty of Medicine

Division of Physical and Occupational Therapy

Annual Examinations, 1953

DENTAL HYGIENE II - PHYSIOLOGY

Write on only ONE part of each question

1. (a) Describe the changes that follow denervation of a muscle.
   (b) Describe the degeneration and regeneration in a peripheral nerve after injury.

2. (a) What are the principle changes that accompany muscular exercise?
   (b) What are the functional.characteristics of the reflex arc?

3. (a) Describe and give an analysis of the condition of the decerabrate animal.
   (b) Discuss spaciticity.

4. (a) Describe and discuss "traumatic shock".
   (b) Describe the effects of spinal transection.

5. (a) Describe the plantar reflex; give the spinal segments involved, and the changes with lesions in the C. N. S.
   (b) Describe the abdominal reflex; give the spinal segments involved, and the changes with lesions in the C. N. S.

6. (a) Give a diagram of a cross-section of the spinal cord with the name and location of 5 ascending and 5 descending tracts.
   (b) Give the probable pathways of kinesthetic impulses.

7. (a) Describe the principle physiological disturbances following lesions of the basal ganglia.
   (b) What are the chief characteristics of lesions of the thalamus?

UNIVERSITY OF TORONTO
FACULTY OF DENTISTRY

ANNUAL EXAMINATIONS, MAY, 1953

DENTAL HYGIENE—SECOND YEAR

PREVENTIVE DENTISTRY

1. Name and discuss one theory as to the cause of dental caries.

2. List and comment briefly on the nutrients which are particularly essential for dental health.

3. (*a*) List Canada's Food Rules.

(*b*) Make suitable dietary recommendations for the following patients, taking into account cost, availability and food value of foods recommended:

(1) Boy age 8 years, average height and weight, L. Acidophilus count 60,000, moderate dental caries susceptibility, Haemoglobin 80.

(2) Girl age 14 years, 10 lbs. overweight, L. Acidophilus count 300,000, rampant dental caries, Haemoglobin 65.

4. (*a*) What is the function of a space maintainer?

(*b*) State *two* dental abnormalities in children that may result from (i) genetic disturbances
(ii) environmental disturbances.

(*c*) State *two* clinical features characteristic of the "ugly duckling" stage of the mixed dentition period.

5. Discuss the role of operative procedures upon the primary dentition in the prevention of malocclusion.

UNIVERSITY OF TORONTO
FACULTY OF DENTISTRY

ANNUAL EXAMINATIONS, MAY, 1953

DENTAL HYGIENE—SECOND YEAR

RADIOLOGY

25 1. (*a*) Using a neatly labelled diagram, discuss the production of X-rays under the following headings:

(i) The parts of an X-ray tube
(ii) Current necessary to produce the X-ray
(iii) The theory involved in the actual process.

(*b*) Distinguish between Primary, Stray and Secondary Radiation.

(*c*) Define radiolucent, artefact, cassette.

18 2. (*a*) What are the five types of X-ray films used in dentistry? Give three different reasons for the use of each.

(*b*) What are the advantages of using a two film packet? What are the disadvantages?

(*c*) What makes up a film packet and what is the purpose of each component?

15 3. (*a*) What questions should be answered by a preliminary inspection of the mouth?

(*b*) Recite the order of procedure suggested when taking a radiograph.

20 4. (*a*) Discuss the film placement of the upper incisor (median view).

(*b*) What are the factors which require changes from the average angulation in this region?

(*c*) What are the principle difficulties involved in taking a radiograph of the maxillary second molar region?

22 5. (*a*) What is the action of the developing solution on an exposed X-ray film? What is the action of the fixing solution?

(*b*) State the causes for the following faulty radiographs:

(i) Yellow stain
(ii) Fogged
(iii) Rainbow effect
(iv) Blisters
(v) Distorted images
(vi) Partial image
(vii) No image
(viii) Lack of contrast.

UNIVERSITY OF TORONTO
School of Social Work

Annual Examination, January, 1953

S.W. 1 - THE FIELD OF SOCIAL WELFARE

"

DENTAL HYGIENE II

NOTE: Please take time to think and organize your answers. Write qualitatively, not quantitatively.

1. (a) What are the objectives of a social security program in a modern industrial country such as Canada?
   (b) How well does our Canadian scheme achieve these objectives?
   (c) What changes would you make in it, if any? Justify your changes or the lack of them.

2. (a) In the total provision of welfare services, what criteria are there to indicate what services should be undertaken by government and what by voluntary agencies?
   (b) In what ways can governmental and voluntary agencies cooperate in the planning and operation of these services?

3. Write brief descriptive notes on any three of the following topics.
   (a) Housing in relation to social welfare
   (b) Family allowances.
   (c) The Community Chest
   (d) Child protection
   (e) Juvenile delinquency

4. Name three references which you have used for this course, and indicate how each was helpful.

Dental Nursing

accounting

UNIVERSITY OF TORONTO
FACULTY OF DENTISTRY

ANNUAL EXAMINATIONS, MAY, 1953

THIRD YEAR DENTAL STUDENTS

AND DENTAL NURSING

ACCOUNTING

Marks

25 1. Give the definition for the following terms used in double entry bookkeeping:

(*a*) Account
(*b*) Capital
(*c*) Accounts Receivable
(*d*) Bills Payable
(*e*) Inventory
(*f*) Depreciation.

75 2. Dr. G. A. Forth has asked you to take care of his books for the month of April. Prepare a Profit and Loss Statement. Keep a supplemental ledger for dental nurse's salary.

April 1. Invested $1000 in dental practice.

2. Bought dental equipment $1600 from Ontario Dental Supply House. Gave them a cheque for $500; and two post-dated cheques, one dated July 10 for $500 and other dated October 10 for $600. (Open a supplemental ledger)

3. Bought stationery and magazines for $125. Paid by cheque.

4. Paid April rent for $150 by cheque.

5. Bought two chairs and a settee for reception room. Paid by cheque $350.

6. Paid dental assistant's salary for week $50 by cash, less Unemployment insurance .44 cents, less income tax deduction of $10. The dental assistant is paid again on the 13th, 20th, and 30. Same amount is paid on each pay day. (Open supplemental ledger)

30. Paid the following accounts by cheque: Toronto Towel Supply Co., $20; Ross and Jones for lab. work, $36.50; Brown and Smith for lab. work, $40; Janitor's salary, $50; Hydro Account, $3.50; Bell Telephone, $14.25; Petty Cash Expenses, $9.33; Dr. Forth's personal withdrawal, $300; Dental Supplies from Ontario Dental Supply House, $135.65; and Toronto Window Cleaners, $3.50.
He estimates the depreciation on his equipment to be $40, and dental supplies used $80.

Dr. G. A. Forth's receipts are as follows:

April 1.	$14.25	April 20.	$12.50
2.	10.00	21.	110.00
5.	60.00	24.	53.50
6.	79.50	26.	143.25
7.	89.35	27.	80.50
8.	120.00	28.	15.00
11.	150.00	29.	140.00
12.	155.50	30.	12.00
15.	18.00		
17.	28.45		

Prepare a patient's ledger card for:

1. Arthur Roberts, 12 Main Street, Oakville, Telephone 250. Estimate given was $75. Work completed on April 20. Amount owing $75. Sent bill, dated April 30.
2. Mrs. John Roberts, 12 Main Street, Oakville, Telephone 250. No estimate given. April 2 paid $5; April 15 paid $10; April 20 paid $5; April 28 paid $15. Work not completed—do not bill.
3. John King, Navy Street, Weston, Telephone 2-345J. Estimate given was $126.50. April 5, Fillings $15, April 19, charge $60. April 25-partial $51.50. Work completed, sent bill dated April 29. No payments made during April. Any payments made by the three patients have already been included in Daily Receipts.

UNIVERSITY OF TORONTO
FACULTY OF DENTISTRY

ANNUAL EXAMINATIONS, MAY, 1953

DENTAL NURSING

BACTERIOLOGY AND RADIOLOGY

PART A. BACTERIOLOGY

Marks

15 1. Describe the technique used to determine if a culture contains gram negative cocci.

15 2. Describe the requirements necessary for a bacterial culture.

20 3. Define briefly the following:
asepsis, virulence, toxin, mixed culture, colony.

PART B. RADIOLOGY

Write in a separate book.

15 1. (*a*) Name the important parts of the dental X-ray machine.

(*b*) What is the current necessary to produce the dental X-ray?

(*c*) What constitutes maximum exposure to a patient?

(*d*) What are the precautions to avoid excessive exposure to radiation?

(*e*) What are the effects of overexposure?

15 2. (*a*) What are the essential items in a "dark" room?

(*b*) Are all types of red lights safe? How can the safety of the red light be tested? Can any other light but red be used? If so, state the colours.

(*c*) What causes deterioration of a developer? How can we lessen this objectionable feature?

20 3. (*a*) Define radioparent, artefact, secondary radiation.

(*b*) State the causes for the following faulty radiographs:
(i) Air bells
(ii) Scratches
(iii) Small white spots
(iv) White residue at bottom of film
(v) Small black spots
(vi) Fog.

(*c*) How can we test an unexposed film to see if it wasn't fogged before use?

UNIVERSITY OF TORONTO
FACULTY OF DENTISTRY

ANNUAL EXAMINATIONS, MAY, 1953

DENTAL NURSING

DENTAL ANATOMY

1. Define: Hypoplasia, Palmers Notation, Contact Point, Fossa, Marginal Ridge, (illustrate where possible).

2. Draw and describe fully all aspects of the following teeth:

$\begin{array}{c|c} & 2 \\ \hline & \end{array}$ $\qquad$ $\begin{array}{c|c} 6 & \\ \hline & \end{array}$ $\qquad$ $\begin{array}{c|c} & \\ \hline & 7 \end{array}$

3. Enumerate and illustrate fully the anatomical differences between deciduous and permanent teeth.

4. Draw the tooth surface or surfaces involved and outline the cavity position.

(1) MOD in $\begin{array}{c|c} & 6 \\ \hline & \end{array}$, (2) do in $\begin{array}{c|c} & \\ \hline 6 & \end{array}$ Class 3 $\begin{array}{c|c} & 1 \\ \hline & \end{array}$

(4) mo in $\begin{array}{c|c} 8 & \\ \hline & \end{array}$, Class 5 in $\begin{array}{c|c} & 3 \\ \hline & \end{array}$

UNIVERSITY OF TORONTO
FACULTY OF DENTISTRY

ANNUAL EXAMINATIONS, MAY, 1953

DENTAL NURSING

DENTAL SURGERY ASSISTANCE

1. What instruments would be required for the surgical removal of a lower impacted molar tooth?

2. (*a*) Describe an orderly procedure for the preparation of a patient for general anaesthesia.
   (*b*) Your duties during the operation.
   (*c*) Post operative care of patient.

3. Write a brief description of the following terms:
   (*a*) Torus.
   (*b*) Apicoectomy.
   (*c*) Odontome.
   (*d*) Cyst.

4. State the uses of the following drugs in dental surgery:
   (*a*) Nembutal.
   (*b*) Oxy cellulose.
   (*c*) Codeine.
   (*d*) Penicillin.
   (*e*) Epinephrine.
   (*f*) Aureomycin.

5. Write about 25 words on the following:
   (*a*) Syncope.
   (*b*) Novocaine.
   (*c*) Coronary thrombosis.
   (*d*) Patient with a history of rheumatic fever.
   (*e*) Anti-Histamine drugs.

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ANNUAL EXAMINATIONS, MAY, 1953

DENTAL NURSING
JURISPRUDENCE AND ETHICS

Marks

20 1. Discuss Conduct in the Dental Office under the following headings:

- (*a*) Receptionist
- (*b*) Courtesy
- (*c*) Dependability
- (*d*) Professional Secrecy.

20 2. Define:

- (*a*) Ethics
- (*b*) Jurisprudence
- (*c*) Contract
- (*d*) Initiative.

20 3. List and discuss the Prime Objectives of a Profession.

20 4. Write a short essay setting forth a nurse's responsibility to the general public.

20 5. Enumerate the factors related to success in Dental Nursing and explain each factor, very briefly.

UNIVERSITY OF TORONTO
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ANNUAL EXAMINATIONS, MAY, 1953

DENTAL NURSING

OPERATIVE DENTISTRY ASSISTANCE

Marks

20 1. Define and give one example of *each* of the following:

(*a*) Antacids
(*b*) Counter-irritants
(*c*) Stimulants
(*d*) Sedatives
(*e*) Disinfectants.

20 2. Discuss in detail how a nurse can assist and the precautions she should take during the following operations:

(*a*) The insertion of a silicate filling.
(*b*) A root canal filling.
(*c*) A gold foil filling.
(*d*) A silver amalgam filling.

20 3. A gold inlay is to be made by the indirect method. Describe:

(*a*) Instruments and equipment necessary at the time of taking the impression.

(*b*) The assistance during the taking of the impression.

(*c*) Instruments and equipment necessary at the time of cementation of inlay.

(*d*) The assistance during cementation of inlay.

20 4. Write brief notes on:

(*a*) Sterilization and asepsis in a dental office.
(*b*) Ordering and storing dental supplies in an office.
(*c*) Sharpening of instruments and the care of oil stones.
(*d*) Making of dental appointments and recall system.

20 5. With the aid of diagrams describe briefly the following instruments: Gingival margin trimmer, Hatchet (No. 2), Enamel hatchet, Spoon, Hoe, Bin-angle chisel, Discoid (No. 18), Wax carver (No. 3), Plastic (Ladmore No. 3), Amalgam plugger (Harper No. 1).

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ANNUAL EXAMINATIONS, MAY, 1953

DENTAL NURSING

ORAL HYGIENE AND PREVENTIVE DENTISTRY

1. Describe the function of the pancreatic gland:
   (*a*) Digestive function.
   (*b*) As a gland of internal secretion.

2. List Canada's Food Rules giving the chief nutrient supplied by each of the food groups mentioned.

3. List and discuss briefly the nutrients which are particularly important in dental health.

4. Name three factors that are considered important in the production of dental caries.

5. Why is dental care of the deciduous teeth of children so important?

6. What agents are generally employed in oral hygiene procedures?

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